Praktyczne aspekty antybiotykoterapii w świetle nowych danych EBM

mgr farm. Piotr Łój

Polskie Towarzystwo Farmacji Klinicznej
POLISH SOCIETY OF CLINICAL PHARMACY

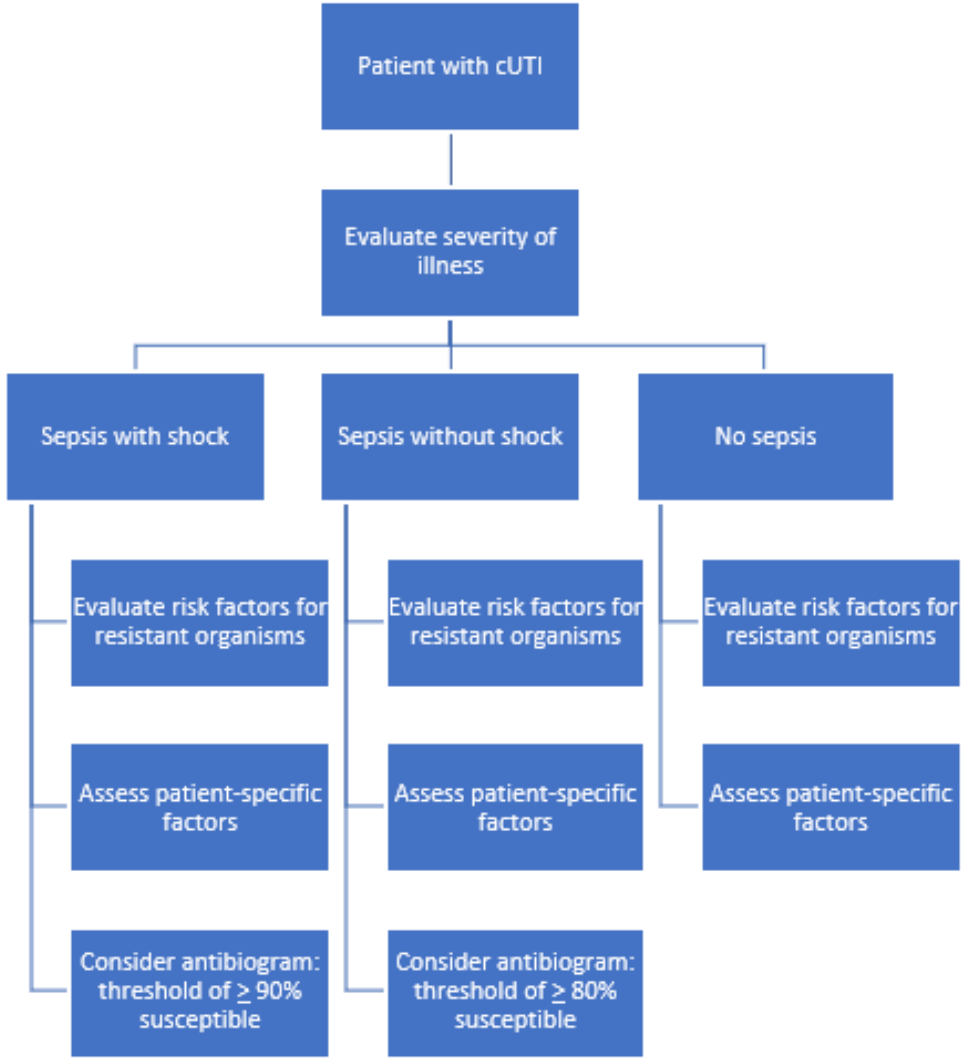
2026 Theme:

"Beyond the Rx: ID Pharmacists as Educators and Advocates"

Konflikt interesów:

W przeszłości przygotowanie i prowadzenie wykładów finansowane przez:
Fresenius Kabi, TZF Polfa, Mölnlycke, Neuca, Hurtap, Norameda, Sandoz, Viatris, Genesis

Figure 1.1: Four-step approach to choosing empiric antimicrobial therapy for cUTI

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IDSA 2025 Guideline Update on Complicated Urinary Tract Infections

Published July 17, 2025

Barbara W. Trautner, Nicolas W. Cortes-Penfield, Kalpana Gupta, Elizabeth B. Hirsch, Molly Horstmen, Gregory J. Moran, Richard Colgan, John C. O'Horo, Muhammed S. Ashraf, Shannon Connolly, Dimitri M. Drekonja, Larissa Grigoryan, Angela Huttner, Gweneth Lazenby, Lindsay Nicolle, Anthony Schaeffer, Sigal Yawetz, Valery Lavergne

New classifications of uUTI and cUTI

Old Classifications

Uncomplicated UTI: Acute cystitis in afebrile nonpregnant premenopausal women with no diabetes and no urologic abnormalities

Acute Pyelonephritis: Acute kidney infection in women otherwise meeting the definition of uncomplicated UTI above

Complicated UTI: All other UTIs

New Classifications

Uncomplicated UTI: Infection confined to the bladder in afebrile women or men

Complicated UTI: infection beyond the bladder in women or men

- Pyelonephritis
- Febrile or bacteremic UTI
- Catheter-associated (CAUTI)
- Prostatitis* (*not covered by these guidelines)

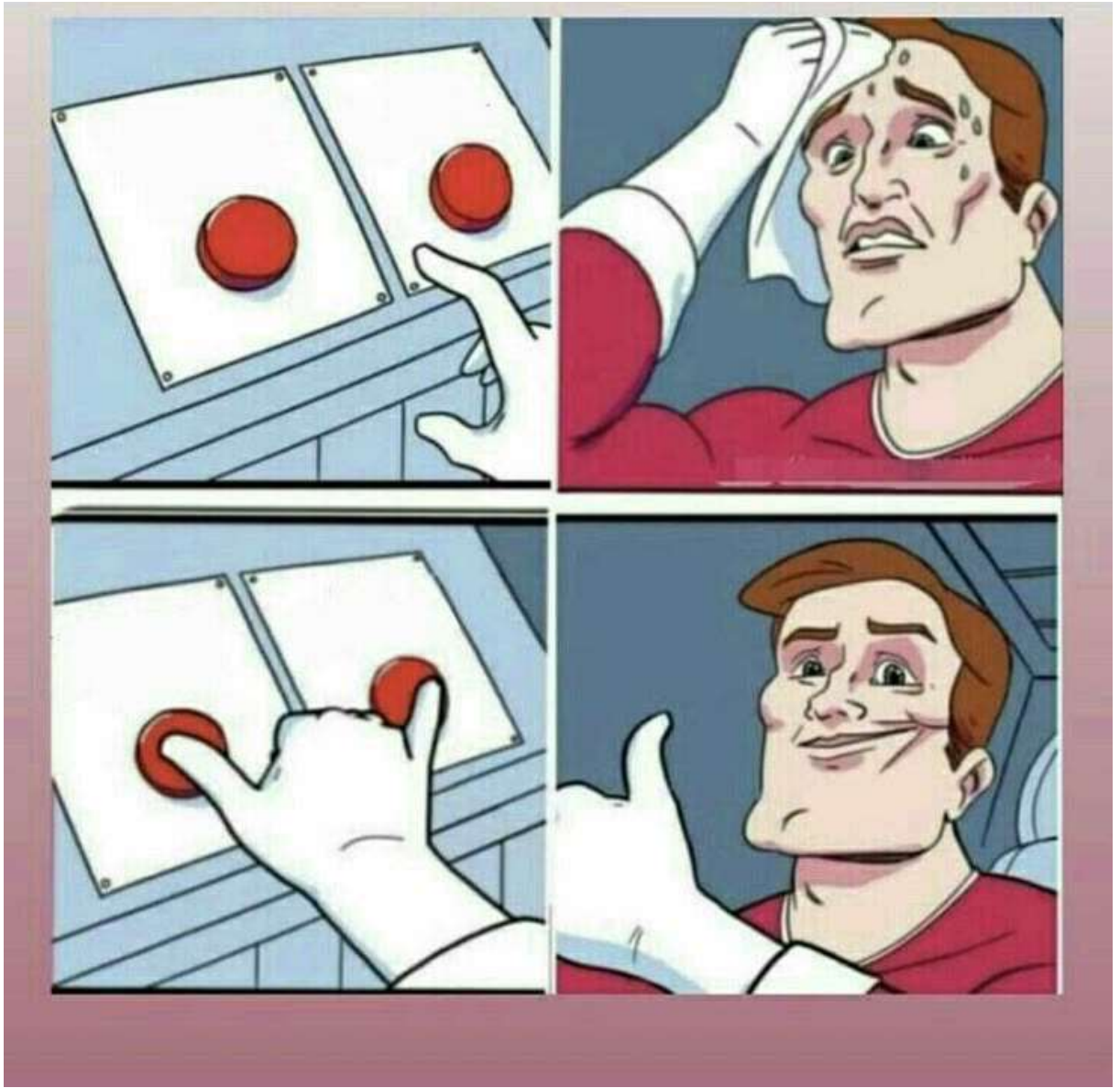
uroweb.org

Localised UTI (i.e., cystitis)	Systemic UTI
• Cytistis with typical signs/symptoms (e.g. frequency[1], urgency[2], suprapubic pain[3]) • No signs/symptoms of systemic infection • Applies to all sexes[4] • Risk factors may be present and should be addressed	• UTI with signs/symptoms of systemic infection (e.g. fever[5], chills[6]) • May also include typical local symptoms (e.g. for pyelonephritis[7] or prostatitis[8]) • Risk factors may be present and should be addressed
	

Table 1: Localised and systematic signs and symptoms of UTI

Localised UTI[1]	Systemic UTI[1,2]
Dysuria (pain, burning, stinging)	Fever or hypothermia
Urgency	Rigors, shaking chills
Frequency	Delirium
Incontinence	Hypotension
Urethral purulence	Tachycardia
Pressure or cramping in the lower abdomen	Costovertebral angle pain/tenderness

1. *Recent onset of these localised and/or systemic signs and symptoms.*
2. *These signs and symptoms are possibly caused by a systemic UTI, but there may be also be alternative explanations.*



Z próbki wyhodowano następujące drobnoustroje:
01. ESCHERICHIA COLI (> 10^5)
   Enterobacterales wykazują naturalną oporność na penicylinę, glikopeptydy, kwas fusydowy, makrolidy, linkozamidy, streptograminy, ryfa

Stosowanie cefuroksymu jedynie do leczenia zakażeń wywoływanych przez wrażliwe szczepy Escherichia coli, Proteus mirabilis, Klebsiella s
dawek:1,5 g iv x 3

Cefuroksym forma doustna- wyłącznie w niepowikłanych zakażeniach układu moczowego lub jako kontynuacja leczenia po formie dożylnej; dawk

Nitrofurantoina - stosować wyłacznie w przypadku niepowikłanych zakażeń układu moczowego (wartości graniczne odnoszą się jedynie do E.co

Wartości graniczne ustalono dla wysokich dawek aminoglikozydów podawanych raz dziennie.

Wrażliwość wyhodowanych drobnoustrojów na antybiotyki:

	01 MIC
01. AMIKACYNA	S
02. AMPICYLINA	S
03. CEFUROKSYM	I
04. CIPROFLOKSACYNA	S
05. GENTAMICYNA	S
06. NITROFURANTOINA	S
07. TRIMETOPRIM / SULFAMETOKSAZOL	S
08. CEFUROKSYM AKSETYL	S

Legenda oznaczeń:
S - wrażliwy
I - średniowrażliwy

TEST GOULDA DODATNI - STWIERDZONO OBECNOŚĆ CZYNNIKÓW HAMUJĄCYCH WZROST FLORY BAKTERYJNEJ GRAM- DODATNIEJ ORAZ GRAM-UJEMNEJ W MOCZU

Edmund Leightona
The Accolade (1901)

The pharmacokinetics of antibiotics in patients with obesity: a systematic review and consensus guidelines for dose adjustments

Anne-Grete Märtson, Katie E Barber, Ryan L Crass, Maya Hites, Charlotte Kloft, Joseph L Kuti, Elisabet I Nielsen, Manjunath P Pai, Markus Zeitlinger, Jason A Roberts, Thomas Tängdén, on behalf of the Pharmacokinetics and Pharmacodynamics of Anti-Infectives Study Group of the European Society of Clinical Microbiology and Infectious Diseases, the International Society of Anti-Infective Pharmacology, and the Society of Infectious Diseases Pharmacists

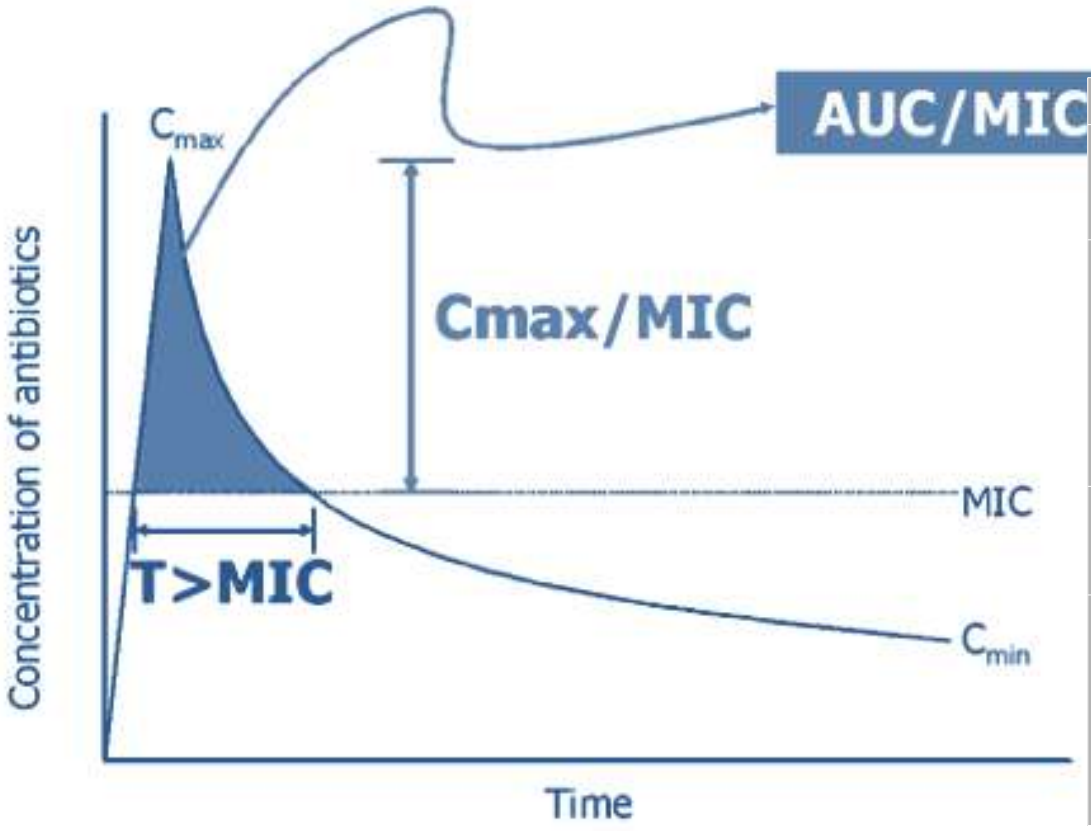
Lancet Infect Dis 2025; 25: e504–15

Published Online May 15, 2025 https://doi.org/10.1016/S1473-3099(25)00155-0

Märtson AG, Barber KE, Crass RL, et al. The pharmacokinetics of antibiotics in patients with obesity: a systematic review and consensus guidelines for dose adjustments. Lancet Infect Dis. 2025;25(9):e504-e515. doi:10.1016/S1473-3099(25)00155-0

Glycopeptides: vancomycin

- A loading dose of 20–25 mg/kg of total bodyweight (maximum 3000 mg) is recommended for patients with obesity and severe infection
- Maintenance doses should be individualised and guided by therapeutic drug monitoring to increase the probability of achieving therapeutic yet non-toxic drug exposures
- If possible, population pharmacokinetic models should be applied to guide dosing



	T	C	T i C
Antybiotyk	B-laktamy	Aminoglikozydy	Glikopeptydy
Predyktor aktywności	**fT>MIC** **40-100%**	**C_{max}/MIC** **8-10 mg/l** **AUC_{24h}/MIC** **80-170 [h^{-1}]**	**AUC_{0-24}/MIC** **400-600 [h^{-1}]**
Cel PK/PD	**Maksymalny czas ekspozycji**	**Zwiększenie stężenia**	**Zwiększenie ekspozycji w czasie**
Działanie	**Częstsze** **Wlew wydłużony** **PO**	**Wysokie dawki** **Rzadsze podawanie**	**Odpowiednie dawkowanie**

Dawka gentamycyny u dorosłych?

Dawkowanie standardowe - 5-7 mg/kg

BW<IBW używamy BW

BW między 1-1,2 IBW używamy IBW

BW > 1,2 IBW używamy ABW

ABW=IBW+[0,4(BW-IBW)]

♀ wzrost dawka	użyta dawka	50		waga do dawk	60		waga do dawk	70		waga do dawk	80		waga do dawk	90		waga do dawk	100		waga do dawk	110		waga do dawk	120	
		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg
155	47,8	239	335	47,8	239	335	56,7	284	397	60,7	304	425	64,7	324	453	68,7	344	481	72,7	364	509	76,7	384	537
160	50,0	250	350	52,4	262	367	59,4	297	416	63,4	317	444	67,4	337	472	71,4	357	500	75,4	377	528	79,4	397	556
165	50,0	250	350	57,0	285	399	57,0	285	399	66,2	331	463	70,2	351	491	74,2	371	519	78,2	391	547	82,1	411	575
170	50,0	250	350	60,0	300	420	61,4	307	430	68,8	344	482	72,8	364	510	76,9	385	538	80,9	405	566	84,9	425	594
175	50,0	250	350	60,0	300	420	66,0	330	462	66,0	330	462	75,6	378	529	79,6	398	557	83,6	418	585	87,6	438	613
180	50,0	250	350	60,0	300	420	70,0	350	490	70,6	353	494	78,3	392	548	82,3	412	576	86,3	432	604	90,3	452	632
185	50,0	250	350	60,0	300	420	70,0	350	490	74,9	375	524	81,0	405	567	85,0	425	595	89,0	445	623	93,0	465	651
190	50,0	250	350	60,0	300	420	70,0	350	490	79,5	398	557	83,7	419	586	87,7	439	614	91,7	459	642	95,7	479	670

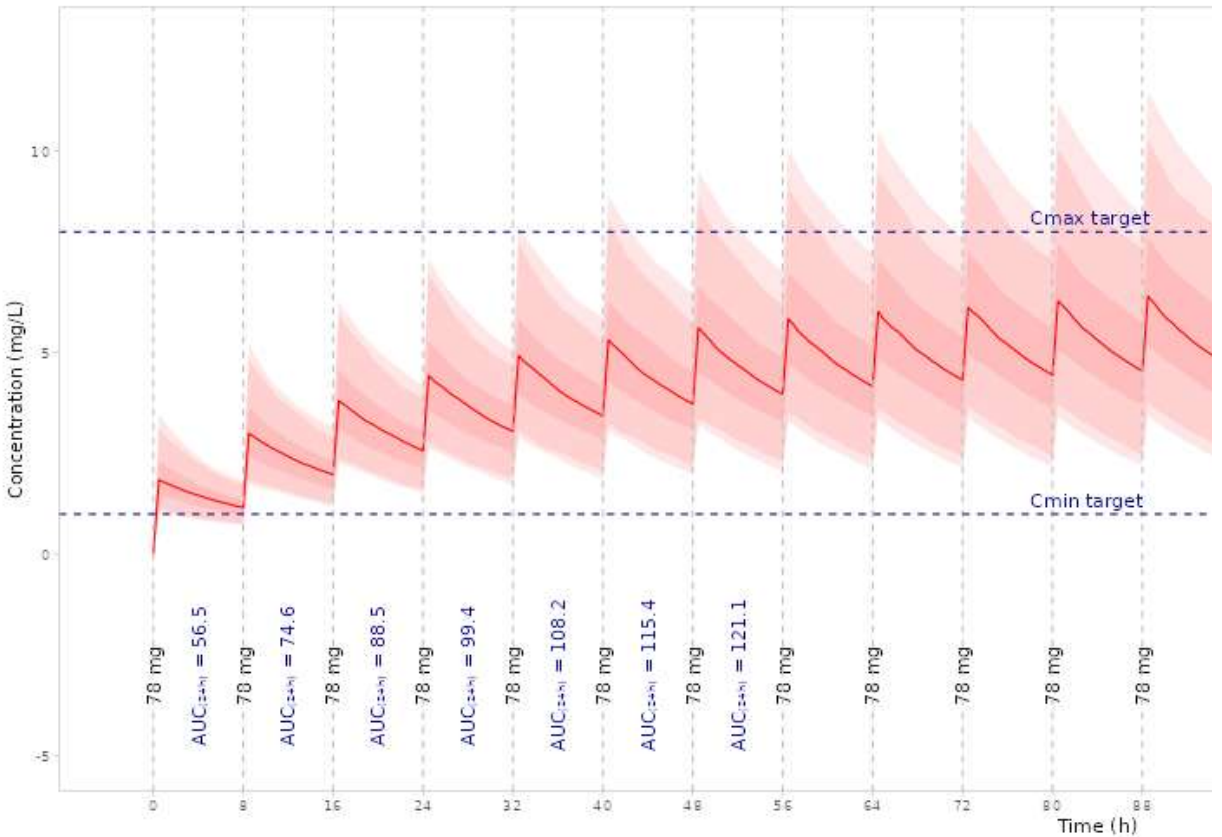
♂ wzrost dawka	waga do dawk	60		waga do dawk	70		waga do dawk	80		waga do dawk	90		waga do dawk	100		waga do dawk	110		waga do dawk	120	
		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg		5mg/kg	7mg/kg
155	60,0	300	420	59,4	297	416	63,4	317	444	67,4	337	472	71,4	357	500	75,4	377	528	79,4	397	556
160	60,0	300	420	62,2	311	435	66,2	331	463	70,2	351	491	74,2	371	519	78,1	391	547	82,1	411	575
165	60,0	300	420	64,9	325	454	68,9	345	482	72,8	364	510	76,9	385	538	80,6	403	564	84,9	425	594
170	60,0	300	420	70,0	350	490	71,6	358	501	75,6	378	529	79,6	398	557	83,6	418	585	87,6	438	613
175	60,0	300	420	70,0	350	490	74,3	372	520	78,3	392	548	82,3	412	576	86,3	432	604	90,3	452	632
180	60,0	300	420	70,0	350	490	80,0	400	560	81,0	405	567	85,0	425	595	89,0	445	623	93,0	465	651
185	60,0	300	420	70,0	350	490	80,0	400	560	83,7	419	586	87,7	439	614	91,7	459	642	95,7	479	670
190	60,0	300	420	70,0	350	490	80,0	400	560	90,0	450	630	90,4	452	633	94,3	472	660	98,4	492	689

1st Dosing Interval PKPD Targets

AUC_{0-24}: 56.5 mg·h/L ✓ OK

C_{max}: 1.9 mg/L (C_{max}/MIC = 1.9) ✗ Too low

C_{min}: 1.17 mg/L ✗ Too high



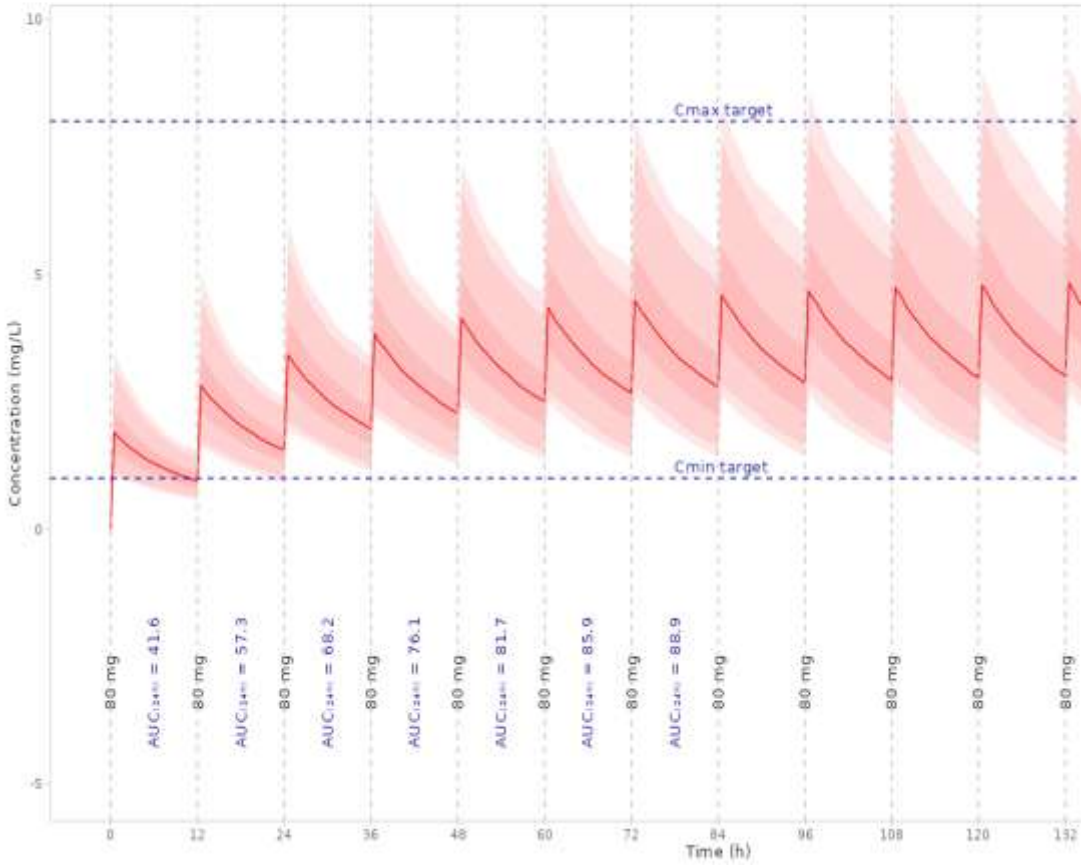
https://pharmsquared.shinyapps.io/Gentamicin/

1st Dosing Interval PKPD Targets

AUC_{0-24}: 41.6 mg·h/L ✓ OK

C_{max}: 2 mg/L (C_{max}/MIC = 2) ✗ Too low

C_{min}: 0.97 mg/L ✓ OK



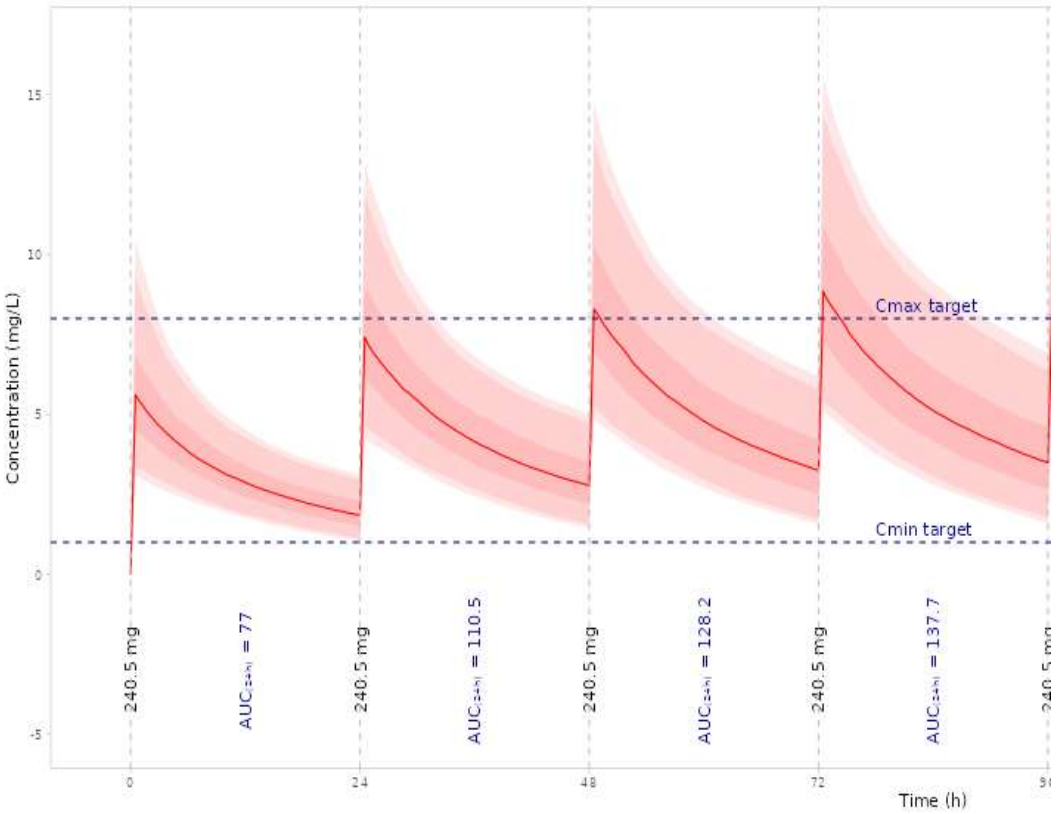
https://pharmsquared.shinyapps.io/Gentamicin/

1st Dosing Interval PKPD Targets

AUC_{0-24}: 77 mg·h/L ✓ OK

C_{max}: 5.9 mg/L (C_{max}/MIC = 5.9) ✗ Too low

C_{min}: 1.93 mg/L ✗ Too high



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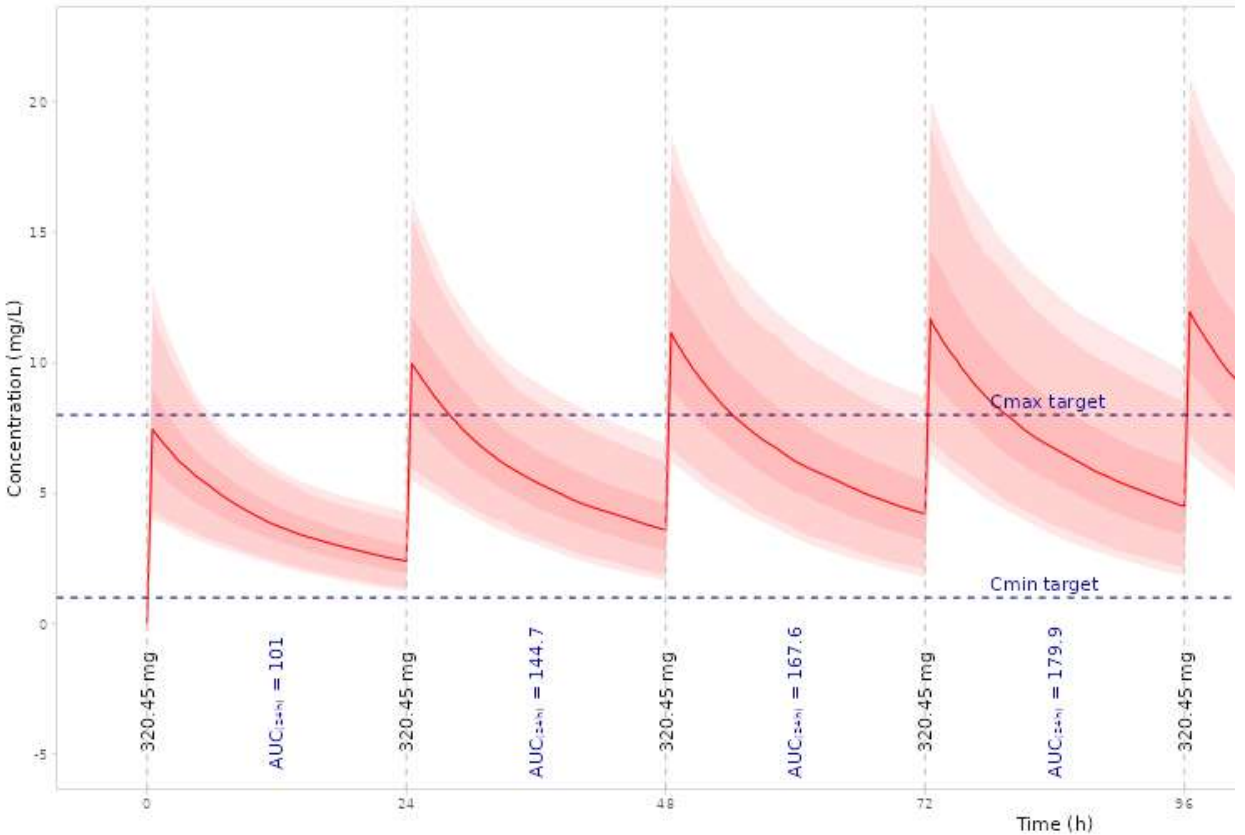
1st Dosing Interval PKPD Targets

AUC_{0-24}: 101 mg·h/L ✗ Too high

C_{max}: 7.7 mg/L (C_{max}/MIC = 7.7) ✗ Too low

C_{min}: 2.52 mg/L ✗ Too high



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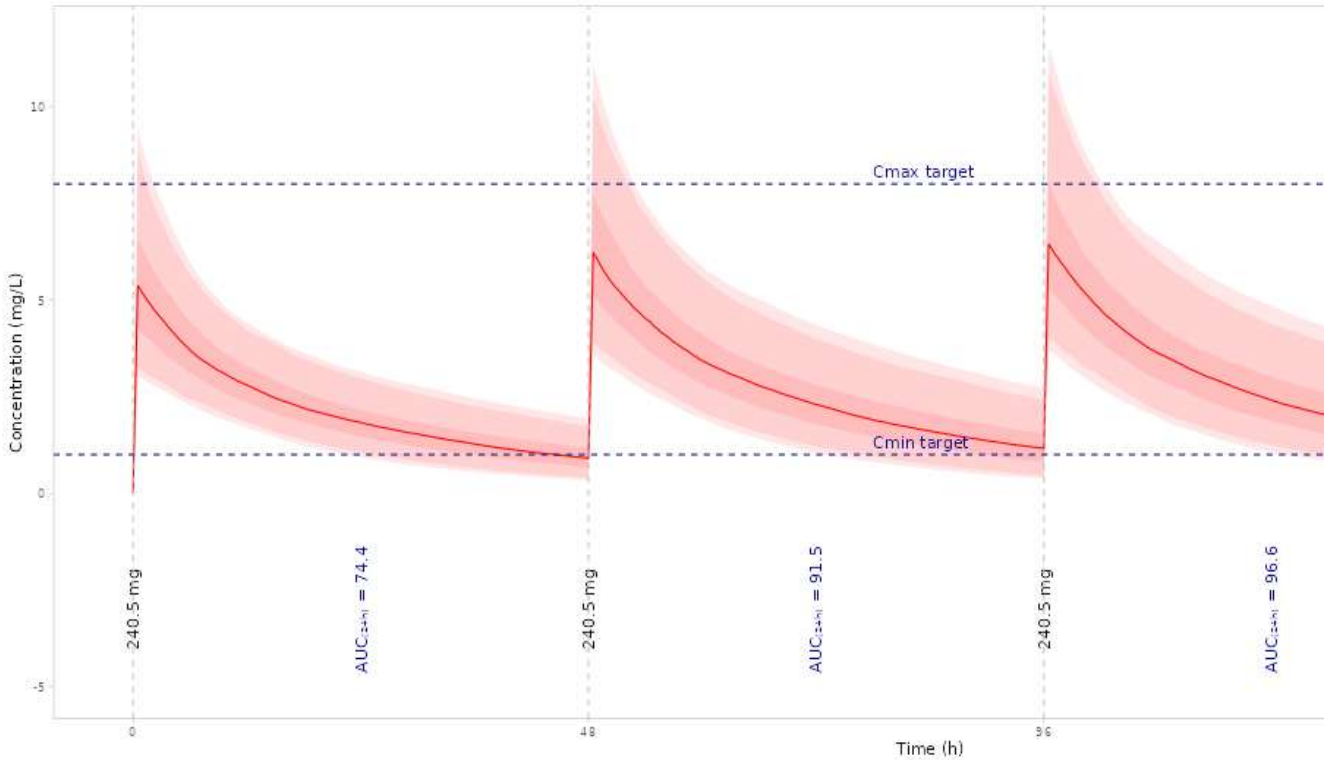
1st Dosing Interval PKPD Targets

AUC_{0-24}: 74.4 mg·h/L ✓ OK

C_{max}: 5.6 mg/L (C_{max}/MIC = 5.6) ✗ Too low

C_{min}: 0.96 mg/L ✓ OK



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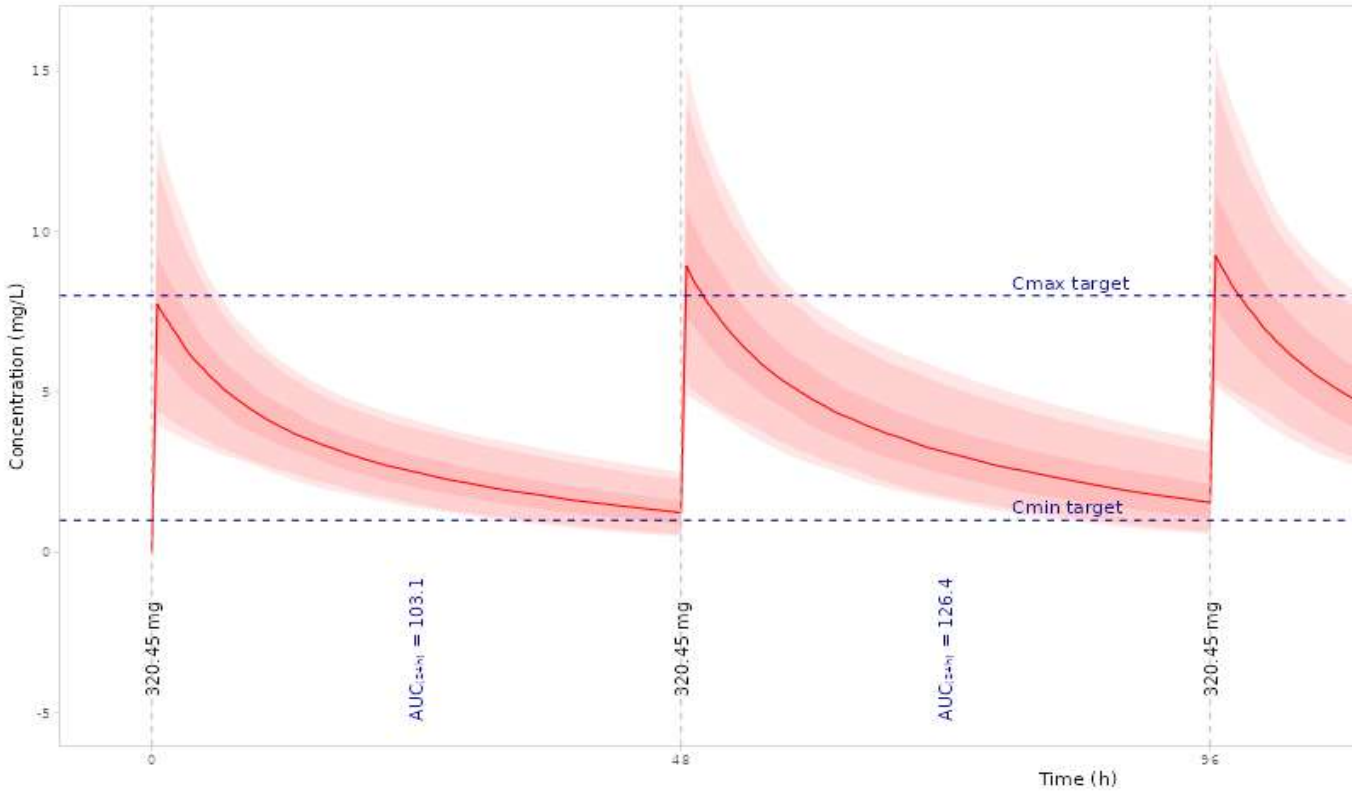
1st Dosing Interval PKPD Targets

AUC_{0-24}: 103.1 mg·h/L ✗ Too high

C_{max}: 7.9 mg/L (C_{max}/MIC = 7.9) ✗ Too low

C_{min}: 1.31 mg/L ✗ Too high



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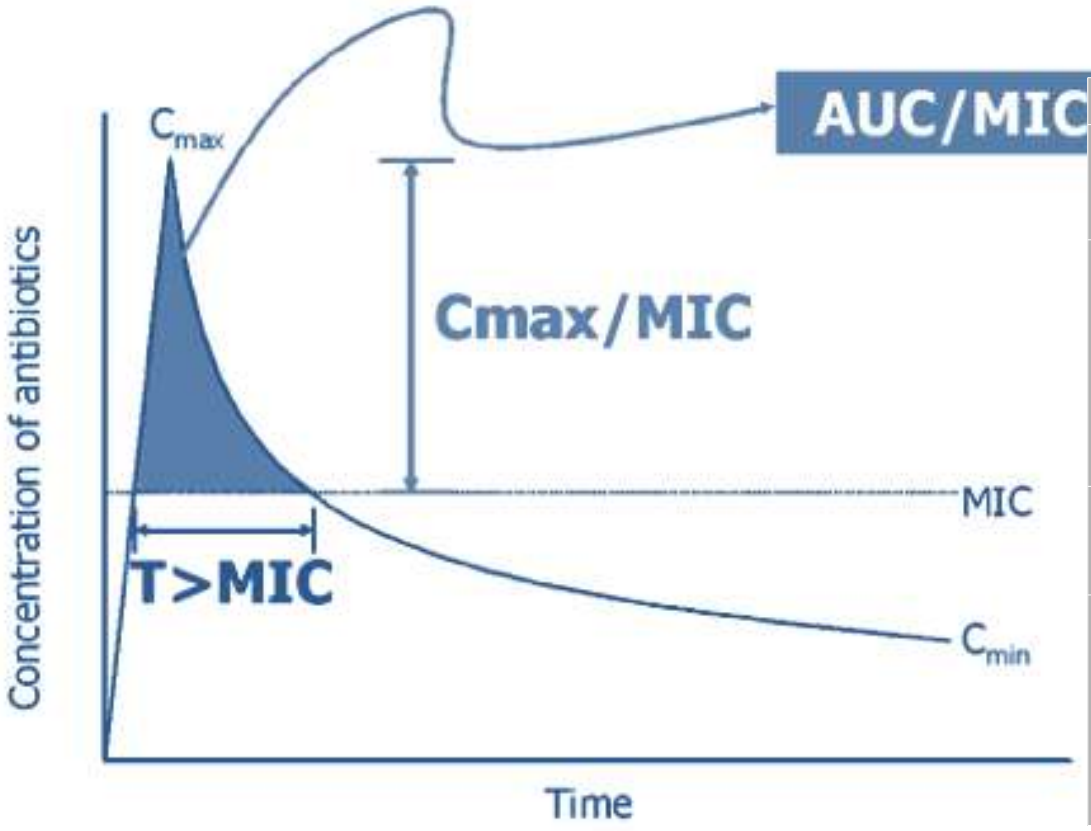

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Intensive Care Med
https://doi.org/10.1007/s00134-026-08361-1

GUIDELINES

Surviving Sepsis Campaign: international guidelines for management of sepsis and septic shock 2026

Check for updates

33 ✓✓ ⊕⊕⊕◯ For adults with sepsis or septic shock, we **recommend** using prolonged infusion of beta-lactams for maintenance (after an initial loading dose) over bolus administration.

2021 STATEMENT

✓ ⊕⊕⊕◯ For adults with sepsis or septic shock, we **suggest** using prolonged infusion of beta-lactams for maintenance (after an initial bolus) over conventional bolus infusion.

34 ✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **suggest** using antimicrobial therapeutic drug monitoring (TDM) on a case-by-case basis in selected patients, based on clinical features, local pathogen- and resistance patterns, drug class, and availability of TDM.

2021 STATEMENT

BEST PRACTICE STATEMENT For adults with sepsis or septic shock, we **recommend** optimizing dosing strategies of antimicrobials based on accepted pharmacokinetic/pharmacodynamic (PK/PD) principles and specific drug properties.

Intensive Care Med
https://doi.org/10.1007/s00134-026-08361-1

GUIDELINES

Surviving Sepsis Campaign: international guidelines for management of sepsis and septic shock 2026

36 ✓✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **recommend** de-escalation of antimicrobial therapy over no de-escalation when a confirmed microbiological diagnosis and susceptibility profile is available.

2021 STATEMENT

✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **suggest** daily assessment for de-escalation of antimicrobials over using fixed durations of therapy without daily reassessment for de-escalation.

Remark: De-escalation involves discontinuing unnecessary antimicrobial therapy or narrowing the spectrum of antimicrobial agents where appropriate.

37 ✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **suggest** de-escalation of antimicrobial therapy over no de-escalation when no pathogens are identified on final culture results.

2021 STATEMENT

✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **suggest** daily assessment for de-escalation of antimicrobials over using fixed durations of therapy without daily reassessment for de-escalation.

Remark: De-escalation involves discontinuing unnecessary antimicrobial therapy or narrowing the spectrum of antimicrobial agents where appropriate.

112 ✓ ⊕◯◯◯ For adults with sepsis or septic shock, we **suggest** comprehensive medication reconciliation using a pharmacist-based approach at transitions in care.

Clinical Microbiology and Infection 28 (2022) 521–547

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Guidelines

European Society of Clinical Microbiology and Infectious Diseases (ESCMID) guidelines for the treatment of infections caused by multidrug-resistant Gram-negative bacilli (endorsed by European society of intensive care medicine)

Mical Paul [1, 2, §], Elena Carrara [3, §], Pilar Retamar [4, 5], Thomas Tängdén [6], Roni Bitterman [1, 2], Robert A. Bonomo [7, 8, 9], Jan de Waele [10], George L. Daikos [11], Murat Akova [12], Stephan Harbarth [13], Celine Pulcini [14, 15], José Garnacho-Montero [16], Katja Seme [17], Mario Tumbarello [18], Paul Christoffer Lindemann [19], Sumanth Gandra [20], Yunsong Yu [21, 22, 23], Matteo Bassetti [24, 25], Johan W. Mouton [26, †], Evelina Tacconelli [3, 27, 28, *, §], Jesús Rodríguez-Baño [4, 5, §]

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Ciężkie zakażenie ESBL → karbapenem

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Ciężkie zakażenie

ESBL → karbapenem?

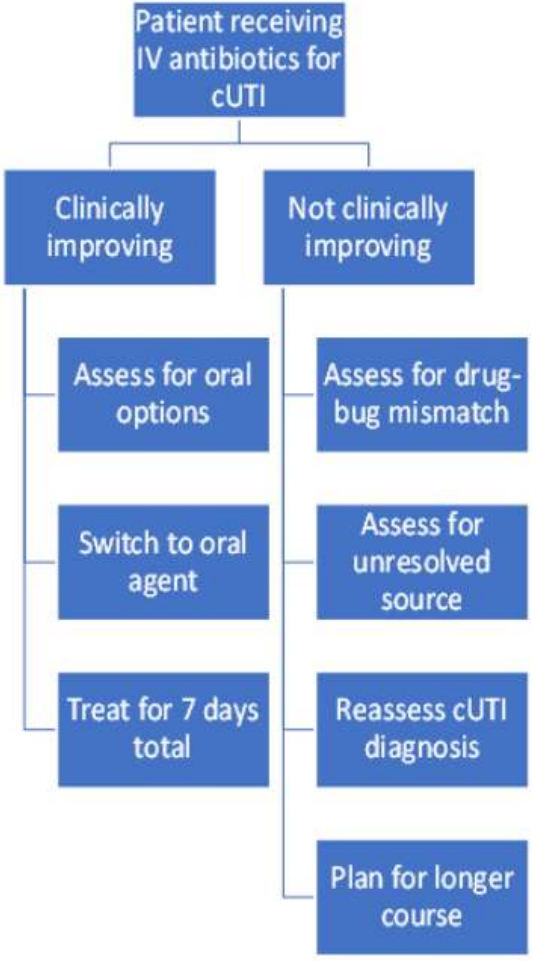
Original Investigation

Effect of Piperacillin-Tazobactam vs Meropenem on 30-Day Mortality for Patients With *E coli* or *Klebsiella pneumoniae* Bloodstream Infection and Ceftriaxone Resistance

A Randomized Clinical Trial

Patrick N. A. Harris, MBBS[1,2,3]; Paul A. Tambyah, MD[4]; David C. Lye, MBBS[5,6,7]; et al

Figure 1.3: Stepwise assessment of IV to oral switch and duration of antibiotic therapy

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Barbara W. Trautner, Nicolas W. Cortes-Penfield, Kalpana Gupta, Elizabeth B. Hirsch, Molly Horstmen, Gregory J. Moran, Richard Colgan, John C. O'Horo, Muhammed S. Ashraf, Shannon Connolly, Dimitri M. Drekonja, Larissa Grigoryan, Angela Huttner, Gweneth Lazenby, Lindsay Nicolle, Anthony Schaeffer, Sigal Yawetz, Valéry Lavergne

Abbreviations: IV=intravenous, cUTI=complicated UTI. Drug-bug mismatch means that the causative organism is not susceptible to the antibiotic prescribed.

Original Investigation | Infectious Diseases

Early Switch From Intravenous to Oral Antibiotics for Patients With Uncomplicated Gram-Negative Bacteremia

Sandra Tingsgård, MD[1]; Simone Bastrup Israelsen, MD, PhD[1]; Henrik Løvendahl Jørgensen, MD, PhD[2,3] ; et al

» Author Affiliations | Article Information

JAMA Netw Open
Published Online: January 23, 2024
2024;7;(1):e2352314.
doi:10.1001/jamanetworkopen.2023.52314

Table 3. Inverse Probability-Weighted 90-Day Risk of All-Cause Mortality Among Individuals With Gram-Negative Bacteremia Continuing IV Antibiotic Therapy vs Early Switch to Oral Antibiotic Therapy

Analysis	90-d Risk of all-cause mortality, % (95% CI)		90-d Risk difference (95% CI)	90-d Risk ratio (95% CI)
	Early oral switch	Continuing IV treatment		
Intention-to-treat	9.1 (6.7-11.6)	11.7 (9.6-13.8)	−2.5 (−5.7 to 0.7)	0.78 (0.60 to 1.10)
Per-protocol	9.6 (6.7-12.4)	9.7 (7.6-11.8)	−0.1 (−3.4 to 3.1)	0.99 (0.70 to 1.40)

Abbreviation: IV, intravenous.

Table 1.2: Dosing of oral antibiotics for complicated UTI				
Drug	**Oral absorption (%)**	**Urinary excretion (%)**	**Dose for patients with normal renal function**	**Refs:**
Amoxicillin-clavulanate	80 (amoxicillin)[61] variable (clavulanate)[62]	50-70 (amoxicillin)[61] 25-40% (clavulanate)[61]	875mg-125mg every 12 to 8 hours[52-55,63-67] Other regimens may be more effective[a]	
Cefixime	50[68]	50[68]	400mg once daily[26]	
Cefpodoxime	50[68]	~30[68]	200mg to 400mg every 12 hours[51,55,72]	
Ceftibuten	75-90[68]	56[68]	9mg/kg daily (children) [b] 400mg daily or 200mg every 12 hours (adults)[73,74]	
Cefuroxime	52[68,70]	50[68,70]	500mg every 12 hours[55,71]	
Cephalexin	90[68]	90[68]	500mg to 1000mg every 6 hours[50,52-54,63-66,69] Other regimens may be more effective[a]	
Ciprofloxacin	70[75]	40-50[75]	500mg to 750mg every 12 hours [50,55,65,76,77]	
Levofloxacin	99[78]	64-100[78]	500mg to 750mg daily[21,50,72,77]	
Other oral beta-lactams (e.g. amoxicillin, cefadroxil, cefaclor, cefdinir)	Comparative clinical outcomes data vs highly bioavailable oral alternatives are more limited and/or discouraging; consider use with infectious disease pharmacist consultation if alternatives are not available.			
Trimethoprim-sulfamethoxazole	70-90[79]	84 (sulfamethoxazole), 66 (trimethoprim)[79]	800mg-160mg every 12 hours[55,76]	

Zasady prezentowania wyników lekowrażliwości bakterii na leki przeciwdrobnoustrojowe – propozycje dla mikrobiologicznych laboratoriów diagnostycznych

Pod redakcją:

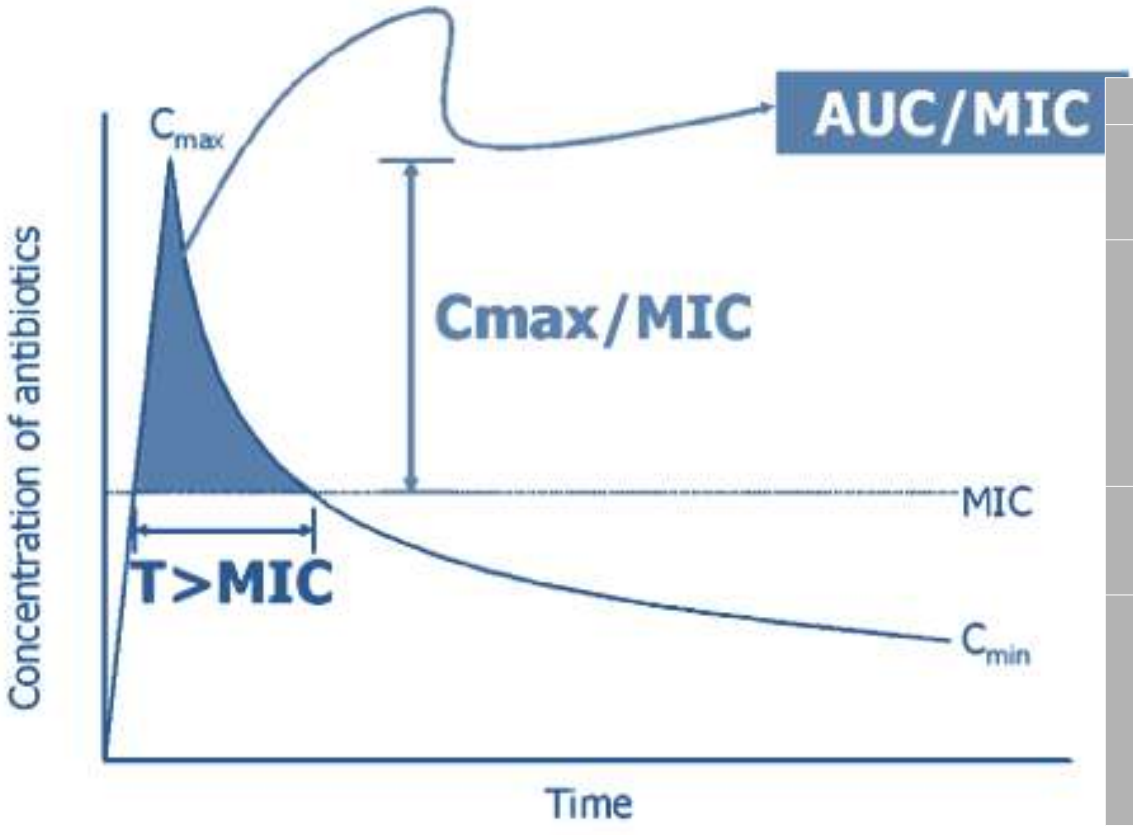
Prof. dr hab. n. med. Katarzyny Dzierżanowskiej-Fangrat

Prof. dr hab. n. med. Walerii Hryniewicz

Dr n. med. Doroty Żabickiej

Dr hab. n. med. Aleksandra Deptuły

Lp.	Antybiotyk	Komentarz do antybiotyku, który należy umieścić na wyniku	Informacja dla laboratorium - kiedy i jak wydawać dany lek na wyniku/uwagi/ dodatkowe komentarze
1	**Ampicylina**		**Zawsze**
2	**Amoksycylina p.o.**	Stosować tylko w niepowikłanych ZUM.	**Zawsze**
3	**Ampicylina-sulbaktam/ Amoksycylina-kwas klawulanowy i.v.**		Wydawać tylko, gdy szczep oporny na ampicylinę i amoksycylinę.
4	**Amoksycylina-kwas klawulanowy p.o.**	Stosować tylko w niepowikłanych ZUM.	Wydawać tylko, gdy szczep oporny na ampicylinę i amoksycylinę.
5	**Cefadroksyl**	Stosować tylko w niepowikłanych ZUM.	**Zawsze**
6	**Cefuroksym i.v.**		**Zawsze**
7	**Cefuroksym p.o.**	Stosować tylko w niepowikłanych ZUM.	**Zawsze**



	T	C	T i C
Antybiotyk	B-laktamy	Aminoglikozydy	Glikopeptydy
Predyktor aktywności	**fT>MIC** **40-100%**	**C_{max}/MIC** **8-10 mg/l** **AUC_{24h}/MIC** **80-170 [h^{-1}]**	**AUC_{0-24}/MIC** **400-600 [h^{-1}]**
Cel PK/PD	**Maksymalny czas ekspozycji**	**Zwiększenie stężenia**	**Zwiększenie ekspozycji w czasie**
Działanie	**Częstsze** **Wlew wydłużony** **PO**	**Wysokie dawki** **Rzadsze podawanie**	**Odpowiednie dawkowanie**

ANTIMICROBIAL AGENTS AND CHEMOTHERAPY, Jan. 1977, p. 132-141

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Pharmacokinetics of Amoxicillin: Dose Dependence After Intravenous, Oral, and Intramuscular Administration

DANIEL A. SPYKER,* RAYMOND J. RUGLOSKI, ROBERT L. VANN, AND WILLIAM M. O'BRIEN

Department of Internal Medicine, University of Virginia School of Medicine, Charlottesville, Virginia 22901, and Beecham Laboratories, Bristol, Tennessee 37620*

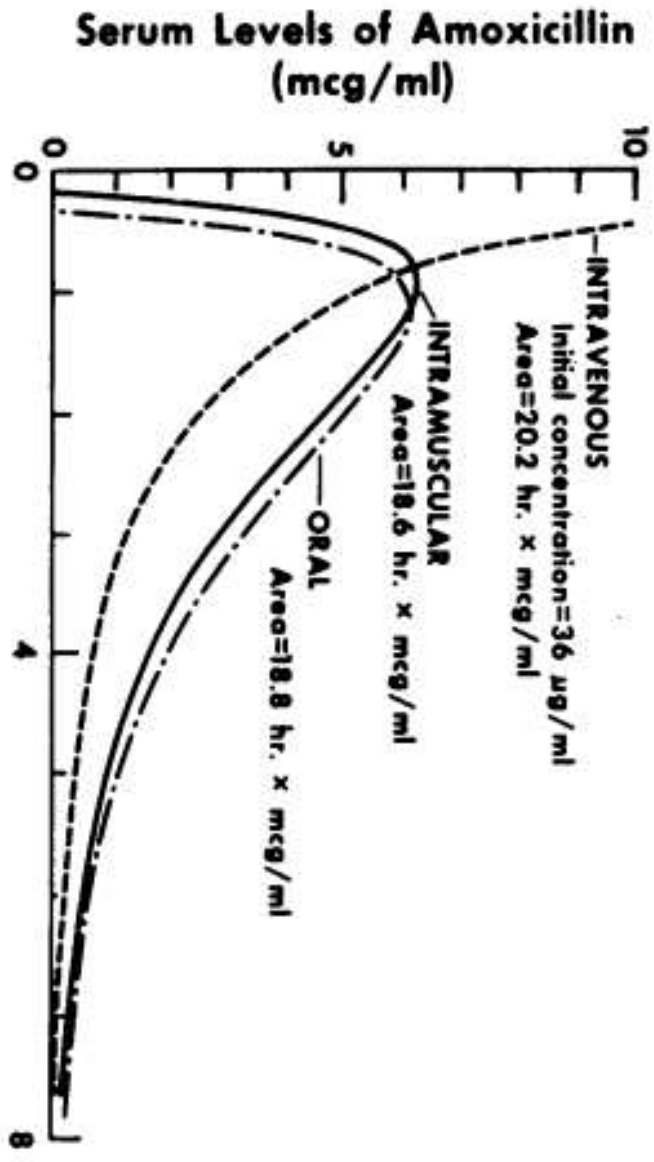
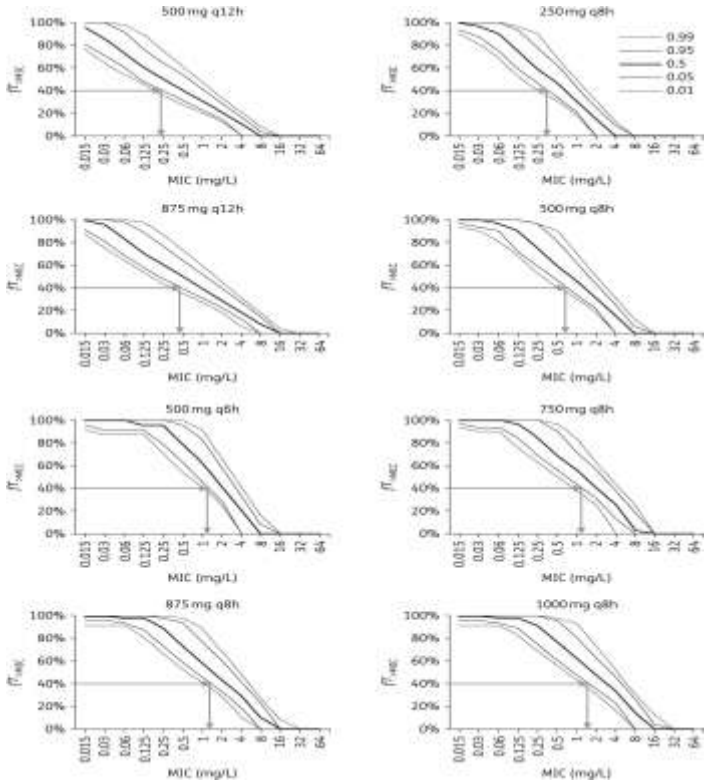


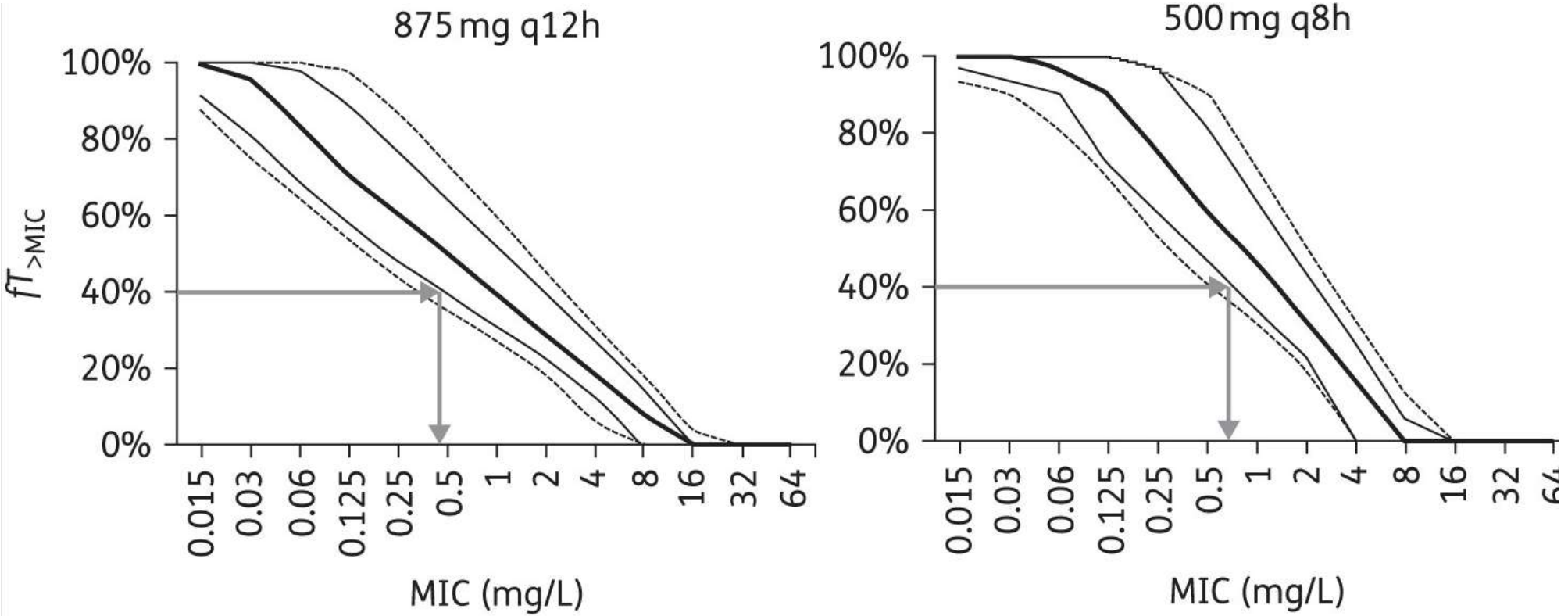
FIG. 7. *Best predictions for serum levels of amoxicillin after i.v., i.m., and p.o. administration. Curves are based on averaged pharmacokinetic parameters assuming a 70-kg patient receiving a single 500-mg dose.*

Figure 5. %$fT_{>MIC}$ displayed as a function of the MIC for several dosing regimens.



J Antimicrob Chemother, Volume 71, Issue 10, October 2016, Pages 2909–2917, https://doi.org/10.1093/jac/dkw226

Figure 5. %$fT_{>MIC}$ displayed as a function of the MIC for several dosing regimens.



J Antimicrob Chemother, Volume 71, Issue 10, October 2016, Pages 2909–2917, https://doi.org/10.1093/jac/dkw226

UK Health Security Agency

The benefits of timely IV to Oral Switch

NHS

Draft – final version coming soon...

Why switch from IV to Oral antibiotics?

IVOS can:

- reduce length-of-stay
- reduce adverse events
- free up nursing time to care
- reduce the use of broad spectrum IV antibiotics
- reduce risk of line complications and healthcare associated infections

Oral antibiotics:

- have a lower carbon footprint
- are more cost effective

Use the UKHSA IVOS criteria for early switch

JAMA Network | Open.

Consensus Statement | Infectious Diseases

Guidelines for Diagnosis and Management of Infective Endocarditis in Adults

A WikiGuidelines Group Consensus Statement

Table 1. Potential Single-Dose Antibiotics for Infective Endocarditis Prophylaxis Based on Antimicrobial Coverage and Risk Mitigation in the Absence of High-Quality, Comparative Studies[a]

Route and allergies	Antibiotic	Dose
Oral	Amoxicillin	2 g
Parenteral (unable to take oral antibiotics)	Ampicillin	2g IM or IV
	Cefazolin	1g IM or IV
	Ceftriaxone	1g IM or IV
Oral (allergic to penicillin)	Cephalexin	2 g
	Azithromycin	500 mg
	Clarithromycin[b]	500 mg
	Doxycycline	100 mg
Parenteral (unable to take oral antibiotics and allergic to penicillin or ampicillin)	Cefazolin[c]	1 g IM or IV

Table 3. Summary of Oral Transitional Antibiotics Used in Published Clinical Studies[a]

Drug	Organism	Dose	References
Amoxicillin	• Sensitive streptococci (with or without combination treatment) • Enterococci (only in combination with rifampin or linezolid)	1 g 4 times daily	Iversen et al,[55] 2019; Stamboulian et al,[61] 1991
Dicloxacillin	Sensitive staphylococci (data from RCT only in combination with rifampin)	1 g 4 times daily	Iversen et al, 2019[55]
Levofloxacin[b]	Sensitive staphylococci (only in combination with rifampin)	750 mg once daily	Iversen et al,[55] 2019; Heldman et al,[62] 1996
Moxifloxacin	Sensitive streptococci, enterococci, or staphylococci (only in combination with amoxicillin, rifampin, or linezolid)	400 mg once daily	Iversen et al,[55] 2019
TMP-SMX	Sensitive staphylococci	960 mg or 4800 mg daily in divided doses	Tissot-Dupont et al,[46] 2019; Freling et al,[47] 2023
Linezolid	Sensitive gram-positive cocci (alone or in combination with rifampin, moxifloxacin, or amoxicillin)[c]	600 mg twice daily	Iversen et al,[55] 2019; Tascini et al,[68] 2011; Falagas et al,[69] 2006; Colli et al,[70] 2007; Muñoz et al,[71] 2007; Freling S et al,[47] 2023
Rifampin	Only as adjunctive agent (as previously described)	600 mg once or twice daily	Iversen et al,[55] 2019; Heldman et al,[62] 1996; Acocella G,[72] 1983; Freling et al,[47] 2023

THE INTERNATIONAL CONSENSUS MEETING ON INFECTION (ICMI)

ICMI is a non-
world to creat
in orthopedics

G78: Can oral antimicrobials be used for the treatment of implant-associated infection?

Armita Armina Abedi, Abdelhak Adjel, Laura Certain, Belen Comeche, Nicolas Cortes-Penfield, Sammy Farah, Camelia Marculescu, Ana Lucia Munhoz Lima, Jose Franciso Reyes Copello, Pēteris Studers, Laila Woc-Colburn

Response/Recommendation: Yes, appropriately chosen oral antimicrobials can be effective for treatment of implant-associated infections.

Level of Evidence: Moderate

The main concern with using oral antibiotics is bioavailability, namely if the antibiotics reach therapeutic levels in the bloodstream when taken by mouth. Studies using oral antibiotics to treat orthopedic infections therefore focus on antibiotics with good oral bioavailability, such as quinolones, rifampin, linezolid, trimethoprim-sulfamethoxazole, amoxicillin, clindamycin, and doxycycline. There is much less data about oral cephalosporins, particularly in the adult population. Another area of concern is patients with obesity, including those who have had

2025 Update to WikiGuidelines for the management of pyogenic osteomyelitis in adults

Brad Spellberg, MD [a,b] · Bassam Ghanem, Pharm.D, MS, BCPS [c] · Clark D Russell, MD [d] · ... · MD Emily G. McDonald, MD, MSc [q] · Todd C. Lee, MD MPH [q] on behalf of the WikiGuidelines Group [#] ... Show more

Table 5. Summary of Oral Antibiotic Doses Used in Published Studies for Osteomyelitis

Drug	Dose	Comment/References
Ciprofloxacin	500-750 mg BID	• Higher dose for *Pseudomonas*[38–40,50,545–551,555,556]
Levofloxacin	750 mg once daily	• Levofloxacin dosing based on [53,476,587]; L-enantiomer of ofloxacin, the latter of which was widely studied for osteomyelitis[48,553,554,557,559]
TMP-SMX	7.5-10 TMP mg/kg/d divided twice or thrice daily (e.g., 2 DS tablets twice daily for a 70 kg adult)	• Most studies used 7.5-10 mg/kg/d,[44,50,569,571,574]; 2 studies[568,573] used 4-6 mg/kg/d, with lower cure rates in one of them[568]
Clindamycin	600 mg TID; 900 TID or 600 QID for larger patients	• 450 mg QID may be used but was not favored in published studies[564,565,588]
Linezolid	600 mg BID	• Standard dosing,[49,561,562,574] monitor for reversible hematotoxicity after 2 weeks, and irreversible neurotoxicity after 4 weeks
Tedizolid	200 mg once daily	• 115 patients total described, success rates ranging from 77% to 100% across small case series[589] • 44 total patients, 17 patients with hard-ware associated infection, 13 with osteomyelitis, 5 with PJI, 2 with "other"; median treatment 12 weeks; 4 patients failed therapy (11%), 19 others were given continued antibiotic suppression due to retention of device[590]
Amoxicillin/ Clavulanate	500 mg TID or 875 mg BID	• Specifically for DFO[48–50]
Rifampin	600 mg once daily	• Doses studied include 600 once per day.[44,53,470,558,569] 900 mg once daily[476,559] or 600 mg BID,[477,574] unclear if efficacy or toxicity differs • 300 mg doses less desirable due to lower AUC levels and less convenience for patients[25,26]
Fosfomycin*	4 to 16 g per day	• Various doses studied with formulations available outside the US, not studied with the sachet powder formulation in the US[575–577]
Cephalexin or cefadroxil	Cephalexin 1.5-2 g per day in adults; 150 mg/kg/d in children; Cefadroxil 50 mg/kg/d in children	• Only 2 studies in adults[430,431] and 2 in children[57,591] reported doses used

*There are no published data for the treatment of osteomyelitis with the sachet powder oral formulation of fosfomycin available in the US

Clinical studies have also reported use of doxycycline or minocycline,[17,54,257,258] however the doses used in these studies were not described.

5 Ways Pharmacists can Be Antibiotics Aware

Verify Penicillin Allergy

Avoid Duplicative Anaerobic Coverage

Reassess Antibiotic Therapy

Avoid Treatment of Asymptomatic Bacteriuria

Use the Shortest Effective Antibiotic Duration

SIDP

SOCIETY OF INFECTIOUS DISEASES PHARMACISTS

HOSPITAL PHARMACISTS:
BE ANTIBIOTICS AWARE

Use the Shortest Effective Antibiotic Duration

SCENARIO

You are performing medication reconciliation and reviewing discharge antibiotic orders for a patient.

Antibiotic stewardship programs are targeting interventions to reduce unnecessarily long durations of antibiotic treatment. In adult patients who have a timely clinical response, guidelines suggest the following durations for uncomplicated cases of these infections:

- **Community-Acquired Pneumonia:** Five days[1]
- **Hospital-Acquired Pneumonia:** Seven days[2]
- **Non-purulent Cellulitis:** Five days[3]

Benefits and Harms of Procalcitonin- or C-Reactive Protein-Guided Antimicrobial Discontinuation in Critically Ill Adults With Sepsis: A Systematic Review and Network Meta-Analysis*

OBJECTIVES: In sepsis treatment, antibiotics are crucial, but overuse risks development of antibiotic resistance. Recent guidelines recommended the use of procalcitonin to guide antibiotic cessation, but solid evidence is insufficient. Recently, concerns were raised that this strategy would increase recurrence. Additionally, optimal protocol or difference from the commonly used C-reactive protein (CRP) are uncertain. We aimed to compare the effectiveness and safety of procalcitonin- or CRP-guided antibiotic cessation strategies with standard of care in sepsis.

DATA SOURCES: A systematic search of PubMed, Embase, CENTRAL, Igaku Chuo Zasshi, ClinicalTrials.gov, and World Health Organization International

CONCLUSIONS

This NMA revealed that procalcitonin- or CRP-guided antimicrobial cessation strategies may shorten antimicrobial therapy without increased mortality or recurrence. In particular, the usefulness of procalcitonin guidance for sepsis where antimicrobials are used for more than 7 days was supported. Procalcitonin monitoring more frequently than halfway through the initial 10 days, with cutoffs of "0.5 μg/L and 80% decline" was promising. These findings will contribute to the implementation of antimicrobial stewardship and the design of further research validating these strategies.

life

MDPI

Review

Procalcitonin: Infection or Maybe Something More? Noninfectious Causes of Increased Serum Procalcitonin Concentration: Updated Knowledge

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ORIGINAL ARTICLE

Antibiotic Treatment for 7 versus 14 Days in Patients with Bloodstream Infections

Authors: The BALANCE Investigators, for the Canadian Critical Care Trials Group, the Association of Medical Microbiology and Infectious Disease Canada Clinical Research Network, the Australian and New Zealand Intensive Care Society Clinical Trials Group, and the Australasian Society for Infectious Diseases Clinical Research Network Author Info & Affiliations

Published November 20, 2024 | N Engl J Med 2025;392:1065-1078 | DOI: 10.1056/NEJMoa2404991

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THE INTERNATIONAL CONSENSUS MEETING ON INFECTION (ICMI)

ICMI is a non-profit organization whose mission is to engage experts from around the world to create compendiums of up to date recommendations, related to various fields in orthopedics, that will improve patient care

G89: is there a role for the administration of newer and long-acting antibiotics such as Dalbavancin, Oritavancin, Fosfomycin, or 5th generation Cephalosporins?

Fouad Z. Sadek, James B. Doub, Laura Morata, Mats Bue , Richard Küehl

Response/ Recommendation:

There may be a role for administration of newer and long-acting antibiotics, as a safe and effective alternative treatment for PJI. At the present time there is more evidence around Dalbavancin use than Oritavancin use, but there is scant evidence regarding Fosfomycin use and unfortunately no clinical data for 5th generation Cephalosporins for the treatment of PJI. Consequently, more research is needed to clarify the role of these agents in the treatment of PJI.

Level of Evidence: Limited

There were 11 studies, published between 2017 and 2023, that discussed the use of Dalbavancin for the treatment of PJIs. (1,3-7,9,10,12,13,16) One study was prospective, the rest being retrospective, with 6 multicentre and 5 single institution studies. A total of 675 patients were treated with intravenous injection of Dalbavancin, of whom 245 were for PJI. The majority of patients were hips (89 patients) and knees (63 patients) and a few shoulders (4 patients) and ankles (1 patient). There were many different microorganisms treated, with the majority being Staphylococci (MRSA, MSSA, MRSE and Coa N. staph), Enterococci, Streptococci, Corynebacteria and polymicrobial as well as culture negatives. Dalbavancin was administered intravenously with different dose regimens varied from short courses of a starting dose of 1500mg followed a week later with another 1500mg administration, to longer courses starting with either 1500mg or 1000mg followed by 500mg weekly. One regimen started with 1500 mg followed by 1000 biweekly and another one started with 750mg followed by 750mg with renal adjustments of the dose. There was also a significant variation in the length of treatment from a short course of one to two doses up to 3 months. Surgical interventions were also not clearly identified but included DAIR, single or two stage procedures and excision arthroplasties and Girdle stones. The results of treatment of Dalbavancin were assessed based on clearance of infection but for various periods of time in different studies. With the exception of one study (3) where there was infection clearance in 8/17 (47%) with 2 PJI-related deaths, 4 relapses and 3 antibiotic suppression, the results of favourable outcome ranged from 75% to 90% but with different periods of follow up from as short as 90 days to more than one year. Adverse drug reactions have also been reported; however, due to the small number of cases, meaningful conclusions could not be established, with the incidence of ADRs ranging from 3% to 13%, including rash, tachycardia, leucopenia, and impaired renal function.

Dalbavancin for Treatment of *Staphylococcus aureus* Bacteremia: The DOTS Randomized Clinical Trial

Nicholas A. Turner, MD MHSc[1], Toshimitsu Hamasaki, PhD[2], Sarah B. Doernberg, MD MAS[3], Thomas P. Lodise, PharmD PhD[4], Heather A. King, PhD[5,6], Varduhi Ghazaryan, MD MPH[7], Sara E. Cosgrove, MD MS[8], Timothy C. Jenkins, MD MSc[9], Catherine Liu, MD[10], Shrabani Sharma, MSc[11], Smitha Zaharoff, PhD[11], Lana Wahid, MD[12,13], Valerie J. Renard, AGACNP[12,13], Paul Cook, MD[14], Issam Raad, MD[15], Ray Hachem, MD[15], Anne-Marie Chaftari, MD[15], Matthew Sims, MD PhD[16], Carmen DeMarco, MD[16], Loren G. Miller, MD MPH[17], Matthew W. McCarthy, MD[18], Caryn G. Morse, MD MPH[19], Chris Lucasti,

Conclusions and Relevance: Among adult participants with complicated *S. aureus* bacteremia who achieved blood culture clearance, dalbavancin was not superior to standard therapy by desirability of outcome ranking. When considered with other efficacy and safety outcomes these findings may help inform use of dalbavancin in clinical practice.

THE LANCET
Infectious Diseases

ARTICLES · Volume 24, Issue 5, P523-534, May 2024 Download Full Issue

Efficacy and safety of an early oral switch in low-risk *Staphylococcus aureus* bloodstream infection (SABATO): an international, open-label, parallel-group, randomised, controlled, non-inferiority trial

Prof Achim J Kaasch, MD [a] · Luis Eduardo López-Cortés, MD [b,d] · Prof Jesús Rodríguez-Baño, MD [b,d] · Prof José Miguel Cisneros, MD [c,d] · M Dolores Navarro, MD [c,d] · Prof Gerd Fätkenheuer, MD [e] · et al. Show more

Interpretation

Oral switch antimicrobial therapy was non-inferior to intravenous standard therapy in participants with low-risk *S aureus* bloodstream infection. However, it is necessary to carefully assess patients for signs and symptoms of complicated *S aureus* bloodstream infection at the time of presentation and thereafter before considering early oral switch therapy.

The study currently includes sites in Australia, New Zealand, Singapore, Canada, Israel, South Africa, Japan, Europe and the UK

The SNAP trial

SNAP aims to improve treatment outcomes for patients with ***Staphylococcus aureus*** bloodstream infections. This website provides information for participants, members of the public, and healthcare professionals about **SNAP** and information about ***Staphylococcus aureus*** bloodstream infections.

This trial is a first of its kind in that it is recruiting adults, paediatrics, and youth.

The study includes sites from Australia, New Zealand, Singapore, Canada, Israel, South Africa, Europe, the UK, and has the potential to expand to other regions.

Staphylococcus aureus **bacteraemia**

+

Treatments for SAB

Adaptive Platform Trials

JOURNAL ARTICLE

Early Oral Antibiotic Switch in *Staphylococcus aureus* Bacteraemia: The *Staphylococcus aureus* Network Adaptive Platform (SNAP) Trial Early Oral Switch Protocol

Dana de Kretser, Jocelyn Mora, Max Bloomfield, Anita Campbell, Matthew P Cheng, Stephen Guy, Marjolein Hensgens, Shirin Kalimuddin, Todd C Lee, Amy Legg ... Show more

Author Notes

Clinical Infectious Diseases, Volume 79, Issue 4, 15 October 2024, Pages 871–887,
https://doi.org/10.1093/cid/ciad666

Published: 31 October 2023 **Article history** ▾

#116 – SNAP Out of It: Rethinking Antistaphylococcal Penicillins for S. Aureus Bacteremia – The SNAP Trial PSSA/MSSA Results

fot. /aut. grafiki Marco Melgrati/

PEN-FAST - Penicillin Allergy Risk

PEN	*Penicillin allergy reported by patient*	☐ *If yes, proceed with assessment*
F	*Five years or less since reaction*[a]	☐ **2 points**
A	*Anaphylaxis or angioedema*	
	OR	☐ **2 points**
S	*Severe cutaneous adverse reaction*[b]	
T	*Treatment required for reaction*[a]	☐ **1 point**
		☐ **Total points**

Interpretation

Points	
0	**Very low risk** of positive penicillin allergy test <1% (<1 in 100 patients reporting penicillin allergy)
1-2	**Low risk** of positive penicillin allergy test 5% (1 in 20 patients)
3	**Moderate risk** of positive penicillin allergy test 20% (1 in 5 patients)
4-5	**High risk** of positive penicillin allergy test 50% (1 in 2 patients)

Zachęcam do zadawania pytań

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